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ABSTRACT

This report evaluates a project designed to provide systemwide direction to the application of education technology in the District of Columbia (DC) Public Schools. The evaluation follows the Planning, Monitoring, and Implementing (PMI) Evaluation Model for Decision Making which was developed by the Division of Quality Assurance of the DC school system. Following a brief summary and a list of 10 specific findings, background and project objectives are presented and the PMI model is described. Agreements and discrepancies for each objective are summarized, and general conclusions are stated. PMI status report forms show specific agreements and discrepancies in the inputs, processes, and outcomes for four project objectives: (1) identification and assessment of technology learning resources and related instructional management processes presently existing in the DC schools; (2) development of procedures for the purchase, operation, and maintenance of technological equipment for instruction, classroom management, administrative, and communication purposes; (3) establishment of guidelines for developing new programs and integrating existing technological programs into the school district's educational technology system; and (4) demonstration of effective management practices in the Educational Technology Office. Appendices include the evaluation model schema, Educational Technology Needs Assessment Questionnaire, Congressional Testimony on Computer Technology, and School Board Directive Concerning Recertification. (LMM)

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# EDUCATIONAL TECHNOLOGY

## Final Report

## 1982-1983

Prepared by
Division of Quality Assurance



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1982-1983

EDUCATIONAL TECHNOLOGY

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## SUMMARY AND FINDINGS

### Title

Educational Technology

### Project Director

Kyo Jhin

### Target Population

90,000 students in regular programs, special education, career development and continuing education; and all teachers and administrators

### Background

In 1982, a District of Columbia Public Schools (DCPS) Computer Literacy Planning Group developed the "Computer Literacy Five Year Plan SY 1983-87". The Division of Educational Technology was established to implement the plan and to organize other technologies, partially assisted by 1982-83 ECIA Chapter 2 funds. A director was hired in January, 1983 at which time the program began.

### Description of Project

In addition to setting up and managing the Educational Technology office the Project Director initiated a series of activities to facilitate managerial responsibilities and educational programming supported by the latest communication technologies.

### Stated Objectives

A: By June, 1983, the Educational Technology office will have identified and assessed technology learning resources and related instructional management processes presently in existence in the D.C. Public Schools.

B: By June, 1983, the Educational Technology office will have developed procedures for the purchase, operation and maintenance of technological equipment for instruction, classroom management, administrative and communication purposes.

C: By June, 1983, the Educational Technology office will have established guidelines for developing new programs and integrating existing technological programs into the Educational Technology System of the D.C. Public Schools.

D: By June, 1983, effective management practices will have been demonstrated in the Educational Technology Office.

## Evaluation

The evaluation follows the Planning, Monitoring, and Implementing (PMI) Evaluation Model for Decision-Making which was developed by the Division of Quality Assurance, District of Columbia Public Schools.

## Findings

1. An identification/assessment questionnaire to determine existing technology resources was developed, but it was determined that distribution should wait for the fall of 1983 to allow for a higher return rate.

2. Advances were made in the areas of vendor selection, monitoring and maintenance procedures.

3. A testimony was given by the Project Director as a representative of the DCPS Superintendent before the House Education and Labor Subcommittee on Elementary, Secondary, and Vocational Education on the topic of Computer Technology.

4. Plans for integrating new and existing programs into the Educational Technology system were developed.

5. Position papers on educational technology topics were written.

6. Proposals (one to develop interactive videodisk courseware and train teachers, another on Math and Science instructional TV, another on a high technology demonstration center) were developed and submitted for funding.

7. Technical assistance to other proposal writers was provided with two of the proposals funded.

8. A technology advisory committee was established including members of the DCPS as well as representatives from area universities and industry.

9. Some of the processes did not take place because of responsibilities not yet assigned, equipment not arriving as scheduled, and time and staff constraints.

10. The general administrative duties required for setting up and running an office were accomplished with staff hired, materials and equipment ordered and a management system for educational technology developed.

## BACKGROUND AND PROJECT DESCRIPTION

### Introduction

Purpose - The purpose of the Educational Technology program is to provide systemwide direction to the application of educational technology in improving instructional programs and services for students, Pre-K through 12th grade.

Need - "The continuing development of new technologies, especially of computers, is revolutionizing American society. The impact of computers spans age, economic, and ethnic lines. In the District of Columbia, with its heavy concentration of white collar industry, computers are used in businesses to manage data and information; as communication devices they link us with the rest of the country and the world. The Federal and District governments, the major local employers, along with their counterparts in the private sector, are now requiring some degree of computer literacy for many positions that are becoming available. Even during times of high unemployment, the local newspapers carry page after page of advertised positions requiring computer skills" (DCPS Computer Literacy Five Year Plan, September, 1982).

The development of other new technologies such as Cable TV and interactive videodisks have had a similar impact. These facts had been recognized by educators throughout the DCPS who were attempting to improve student learning through the acquisition of technological instruments. However, this was being done in a random way, and the need became obvious to study, coordinate, recommend and direct the acquisition and use of these new technologies.

History - In 1982, a Computer Literacy Planning Group was established in DCPS. Resulting from the work of this group was a document entitled "Computer Literacy Five Year Plan SY 1983-87" The program areas covered by the plan were as follows: Instructional Objectives/Instructional Computing, Software, Hardware, Computer Literacy Training Laboratory, Computers and other Interactive Technologies, and Interaction with other Groups. With the advent of ECIA Chapter 2 during the 1982-83 school year, the Educational Technology Project was designated to direct the carrying out of much of the plan and to include the use of other technologies. A search began for a qualified director. In January, 1983 the director was hired and the project began.

### Description of the Project

Target Population - For the Educational Technology project, the target population consisted of 90,000 students in regular programs, special education, career development and continuing education; and all teachers and administrators.

Staffing - During the first partial year of the project, the staff consisted of the Project Director beginning in January, an acting secretary beginning in February and a W.A.E. assistant beginning in March.

Program - During the five months in which the program was in existence during the first year of funding, the project director had planned tc set up and manage the Educational Technology Office; to determine what educational technologies existed in the district; to develop procedures for purchasing, operating and maintaining technological equipment and to study programs using or desiring to use new technologies.

## EXTERNAL EVALUATION DESIGN - PLANNING, MONITORING AND IMPLEMENTING (PMI) EVALUATION MODEL FOR DECISION-MAKING

The evaluation follows the Planning, Monitoring, and Implementing (PMI) Evaluation Model for Decision-Making which was developed by the Division of Quality Assurance, District of Columbia Public Schools. (See Appendix A.) The evaluation design which was developed at the beginning of the project year, consisted of the intended inputs, processes and outcomes on specially designed status report forms. The interim report distributed at the mid-point of the project cycle related, on the status report forms, agreements or discrepancies between intended and observed inputs and processes. This final report includes the interim report data brought up to date, plus the agreements and discrepancies between intended and observed outcomes for each objective. Supporting data are included in the appendix. Preceding the PMI status report forms is the results section which summarizes the agreements and discrepancies for each objective and states a general conclusion.

# RESULTS

The results of the evaluation are summarized in this section. Following the narrative are the inputs, processes and outcomes on which this summary is based presented in the PMI reporting format. Supporting data are in the appendix.

Objective A - By June, 1983, the Educational Technology office will have identified and assessed technology learning resources and related instructional management processes presently in existence in the D.C. Public Schools.

The first objective was to identify and assess technology learning resources in the DCPS. All intended and observed inputs were in agreement. Staffing for this objective consisted of the Program Manager, Project Director and secretary. Office space, supplies and equipment were adequate. Scanning, computer and word processing facilities were available.

Three of the processes showed agreement and two showed discrepancies between observed and intended items. In agreement were the preparation and review of an identification/assessment questionnaire to determine existing educational technology resources. Also in agreement was a system coordinated with DAIS for inventory control of computer literacy software and hardware. The two discrepancies were concerned with the distribution and collection of the questionnaires and analysis of their results. The Project Director and Program Manager determined that it was preferable to distribute the questionnaire in the Fall of 1983, to allow for a higher return rate than at the end of the school year.

Because of the process discrepancies, outcomes 1a and b, on the identification and assessment of technological learning resources and related instructional management outcomes also showed discrepancies between observed and intended items. The intended outcomes will be delayed until the questionnaires are processed. The status for the second outcome was agreement. The questionnaire to identify and assess the resources is the basis for keeping an inventory of computer literacy software and hardware.

Although Objective A was not met during the first partial year, the planning was completed and is ready to be put into effect during the 1983-84 year.

Objective B - By June, 1983, the Educational Technology office will have developed procedures for the purchase, operation and maintenance of technological equipment for instruction, classroom management, administrative and communication purposes.

Objective B was on developing procedures for the purchase, operation and maintenance of technological equipment. Nine of the ten inputs showed agreement between observed and intended items. These included staff of the Computer Training Laboratory in addition to project staff, directives (The Five Year Computer Plan), informational material, purchasing and maintenance specifications and adequate materials, supplies and space. The discrepancy was in not having the assessment questionnaire results.

The processes showed six with agreement between observed and intended items, and eleven with discrepancies. Three of the processes that were observed to be in agreement were those concerning vendors - their selection and the monitoring of their compliance with contracts both in purchasing and maintenance specifications. There was also agreement on the establishment of a hotline maintenance clearing house, the development of an in-house maintenance program and the summarizing of maintenance procedures to produce maintenance guidelines. Discrepancies were found in areas where the responsibility had not been turned over to Educational Technology (ex. Media Center for review, selection and evaluation of hardware; the installation of core equipment in schools and executive offices); contracts had not yet been signed (for the installation of computer laboratories in Chapter 1 schools); and computers had not yet arrived for installation. The final discrepancy was in the development of guidelines to demonstrate safe and competent use of educational technology resources. This process would begin during the 83-84 year, after the results of the survey had been assessed.

The process discrepancies led to outcome discrepancies. The first outcome stated that a selection Guideline for Educational Technology Hardware would be completed and the second outcome was the establishment of procedures to assure the safe and competent use of hardware and software. The Library Media departments where this outcome was to occur were not to be officially under Educational Technology until July 1, 1983. Before that, the Project Director provided consultation and his expertise was used, but procedures and guidelines were not documented. The third outcome was the production of an educational technology Maintenance Guideline. This was not completed due to time and staff constraints but the project director continued working on it.

Due mainly to circumstances beyond the control of the Project Director, Objective B was not met although several of the tasks were in process.

Objective C - By June, 1983, the Educational Technology office will have established guidelines for developing new programs and integrating existing technological programs into the Educational Technology System of the D.C. Public Schools.

Objective C was concerned with the establishment of guidelines for developing new programs and integrating existing technological programs into the educational technology system of the DCPS.

All observed and intended inputs were in agreement. The program manager, program director, secretary and W.A.E. assistant were observed. The Project Director had communicated with directors or representatives of existing educational technology programs such as the Beltway Project, Project BEST, the Fair Break Program and the AIMS Program. Materials, supplies, journal subscriptions and space were adequate. The status of the processes for Objective C was agreement between all observed and intended items. Plans for integrating new and existing programs into the Educational Technology system were developed and new potential pilot programs were explored (use of electronic mail, use of videodisks and use of other interactive technologies).

The observed outcomes for this objective were in agreement with the intended outcomes. Guidelines had been established for (1) integrating existing educational technology programs into the system and (2) developing new compatible programs. In addition to the program plan, position papers had been written, a testimony was given by the Project Director before the House Education and Labor Subcommittee and proposals had been written for new programs.

The data collected for Objective C showed that this objective was met.

Objective D - By June, 1983 effective management practices will have been demonstrated in the Educational Technology office.

All intended and observed inputs were in agreement. In addition to the staff previously mentioned, the staff of the Instructional Services Center (ISC) was an input and it was observed that Education Technology and ISC coordinated educational technology activities. The Project Director also maintained contact with other school districts interested in exchanging information and with DCPS personnel interested in writing proposals using technology. Other inputs included the Five Year Computer Literacy Plan, technology documents, and dissemination facilities. Office supplies, equipment and space were observed to be adequate.

All of the Objective D processes were observed to be in agreement with their intended counterparts. General administrative duties were accomplished. These included supervising staff developing a management system for the Educational Technology office, and seeking corporate and other agency involvement. The Project Director sought involvement with IBM, Atari, the U.S. Education Department, several universities, national funding agencies, TV stations, Cable TV Design Commission and Public Access Board. He worked with the ISC on teacher recertification requirements, planned and established a technology advisory committee and developed plans for strengthening existing and establishing new resource centers for Educational Technology. He exchanged information concerning educational technology and he provided technical assistance to district personnel in proposal writing and staff development.

The status between observed and intended outcomes was agreement for all four outcomes. The general administrative duties necessary in establishing and operating the Educational Technology office were accomplished, the advisory committee was established as were procedures for monitoring state-of-the-art development and disseminating educational technology information concerning the DCPS program, and technical assistance was provided to other departments.

Objective D was met. Effective management practices were demonstrated in the Educational Technology office.

Conclusion

This project was late in starting, with the hiring of the Director in January 1983 and the writing of the evaluation design in February. Thus, the evaluation is based on less than five months' activities. Although the first

two objectives, those concerned with identifying/assessing technology learning resources and developing procedures for the acquisition of equipment, were not met, Objective C and D, on establishing guidelines for developing new programs/integrating existing programs into the Educational Technology System, and demonstrating effective management practices, were met, accomplished by a very small staff (the Director, an acting secretary and a W.A.E. assistant hired in the spring). Many of the discrepancies in outcomes were preceded by discrepancies in processes, where the processes were not possible because of responsibilities not yet having been assigned. Others were due to equipment not arriving as planned while others were due to time and staff constraints. The accomplishments observed in the outcomes of Objective C and D outweigh the discrepancies of A and B. For the short time this program has been in existance, it is a success.

Decisions

This report will be forwarded to the Project Director, Project Manager, LEA Chapter 2 Director, the Superintendent and the School Board to aid them in their decision-making concerning this project.

FINAL REPORT

PLANNING, MONITORING, AND IMPLEMENTING (PMI)
EVALUATION MODEL FOR DECISION-MAKING

Reporting Form

Goal: To provide systemwide direction to the application of educational technology

Objective A: By June, 1983, the Educational Technology office will have identified and assessed technology learning resources and related instructional management processes presently in existence in the D.C. Public Schools.

PART I

INPUTS

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| - Director of Program Development | Agreement | - The Director of Program Development was designated as Program Manager for this project, as verified by ECIA Chapter 2 information distributed to all project coordinators. |
| - Project Director | Agreement | - The Evaluation Team met with the Project Director on several occasions beginning in February, 1983 when the Evaluation Design was written. |
| - Secretary | Agreement | - The secretarial position was filled in the spring, as evidenced by personnel records. Previous to that, an acting secretary was detailed to the project until the permanent assignment was made. |
| - Research Assistant | Agreement | - A WAE Research Assistant was hired in the spring as evidenced by personnel records. |
| - Schools in the District of Columbia | Agreement | - The names of all schools were on record in the project office. |

OBJECTIVE A

PART II (continued)

INPUTS

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| - Adequate office supplies and equipment | Agreement | - The project director stated that office supplies and equipment were adequate to begin the program. |
| - Scanning forms, if needed | Agreement | - Scanning forms were available on loan but were not used this year, according to the Project Director. |
| - Scanning facilities | Agreement | - Scanning facilities were available through DAIS as observed by the Evaluation Team. |
| - Word processing facilities | Agreement | - The Educational Technology office word processor was observed by the evaluators. |
| - Computer facilities | Agreement | - The Project Director had access to D.C. Public Schools' computer facilities, through his own terminal. |
| - Adequate office space | Agreement | - The project director stated that office space was adequate. |

OBJECTIVE A

PART II

PROCESSES †

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 1a. The Project Director, with technical assistance from the Chapter 2 Evaluation Unit, will prepare an identification and assessment questionnaire to determine existing educational technology resources (software, hardware, instructional management processes). | Agreement | 1a. The questionnaire was completed and is on file in the project office. |
| b. The Director of Program Development will review the questionnaire. | Agreement | b. The Director of Program Development reviewed the questionnaire. |
| c. The Project Director and staff will distribute the questionnaires and scanning forms to all District of Columbia Public Schools and offices. | Discrepancy | c. The Project Director and Program Manager determined that it was preferable to distribute the questionnaire in the Fall of 1983, to allow for a higher return rate than at the end of the school year. |
| d. The Educational Technology staff will collect and analyze questionnaire results. | Discrepancy | d. (See C above.) Questionnaires will be collected and results analyzed in the Fall. |
| 2. The Project Director and staff will design and implement a system for inventory control of computer literacy software and hardware. | Agreement | 2. DAIS has a system which is coordinated with Educational Technology and will be expanded as more data are collected through the questionnaires. |

† Processes numbered to correspond with outcomes

OBJECTIVE A

PART III

OUTCOMES

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 1a. Data submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director by June, 1983 will show that technological learning resources in the D. C. Public Schools have been identified and assessed. | Discrepancy | 1a. This outcome will be delayed by a few months since it was determined that the response rate would be increased if questionnaires were sent in the fall instead of the spring. |
| b. Data submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director by June, 1983 will show that instructional management processes related to technological learning resources in the D.C. Public Schools have been identified and assessed. | Discrepancy | b. Instructional management processes related to technological learning resources were to be identified through the questionnaire. This outcome will be delayed until questionnaire responses have been analyzed. |
| 2. Records submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director will show that a procedure for keeping an inventory of computer literacy software and hardware has been established. | Agreement | 2. The procedure for keeping an inventory was established. Areas set up for the inventory were arranged in the same order as those on the questionnaire to identify and assess technological learning resources. (See Appendix B.) |

FINAL REPORT

PLANNING, MONITORING, AND IMPLEMENTING (PMI)
EVALUATION MODEL FOR DECISION-MAKING

Reporting Form

Goal: To provide systemwide direction to the application of educational technology

Objective B: By June, 1983, the Educational Technology office will have developed procedures for the purchase, operation and maintenance of technological equipment for instruction, classroom management, administrative and communication purposes.

PART I

INPUTS

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| - Director of Program Development | Agreement | - The Director of Program Development was designated as Program Manager for this project, as verified by ECIA Chapter 2 information distributed to all project coordinators. |
| - Project Director and staff | Agreement | - The Evaluation Team met with the Project Director on several occasions. A secretary and WAE Research Assistant were hired as evidenced by personnel records. |
| - Staff of Computer Training Laboratory | Agreement | - Evaluators observed staff at the Computer Training Laboratory. |
| - Directives concerning review, selection and evaluation of software and hardware | Agreement | - The Five Year Computer Plan containing directives concerning software and hardware were on file in the project office. |
| - Assessment questionnaire results | Discrepancy | - Assessment questionnaires were not distributed in the spring, but were planned for fall delivery, assuming a greater response rate. |

OBJECTIVE B

PART II (continued)

INPUTS

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| - Software and hardware catalogues, journals and other informational material | Agreement | - Informational material were observed by the evaluators in the project office. |
| - Purchasing specifications | Agreement | - Purchasing information, included in the five year plan, was on file in the project office. |
| - Vendor maintenance specifications | Agreement | - Vendor information, included in the five year plan, was on file in the project office. |
| - Adequate materials and supplies | Agreement | - The project director verified that materials and supplies were adequate. |
| - Adequate office space | Agreement | - The project director stated that office space was adequate. |

OBJECTIVE B

PART II

PROCESSES †

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 1a. The Project Director and staff will refine evaluation criteria, forms, etc. needed for review, selection and evaluation of hardware. | Discrepancy | 1a. The aspect of this task that comes under the Media Center was postponed until the fall since the Library and Media Center were assigned to Educational Technology to begin July 1, 1983. The Computer Training Laboratory continued under the supervision of the Instructional Services Center. |
| b. The Project Director will finalize guidelines and procedures for selecting and evaluating hardware. | Discrepancy | b. This task was planned for the fall of 1983 (see above.) |
| c. The Project Director and staff will supervise the acquisition of hardware including the following: | | |
| (1.) Select vendors | Agreement | (1.) Some vendors were already selected. The Project Director's role in supervising the selection of vendors was to approve the purchase of all instructional computers. |
| (2.) Monitor vendor compliance of contract purchasing specifications | Agreement | (2.) The Project Director stated that he had some meetings with vendor representatives and had monitored 13 sites which had purchased hardware. |

† Processes numbered to correspond with outcomes

OBJECTIVE B

PART II (continued)

| PROCESSES † | | |
|---|---|---|
| INTENDED | STATUS | OBSERVED |
| (3.) Supervise the installation of core equipment in all schools and executive offices | Discrepancy | (3.) The Project Director stated that this responsibility was not assigned to his office. |
| (4.) Supervise the installation of computer laboratories in 50 Chapter 1 elementary schoools | Discrepancy | (4.) The contract had not yet been signed. Plans were in effect to complete the installation by the fall of 1983. |
| (5.) Supervise the installation of computer laboratories in 50 regular schools (elementary, junior and senior high schools). | Discrepancy | (5.) The Project Director Monitored the Commodores, printers, telephone lines and cables, but computers had not been installed. |
| 2. The Project Director and staff will develop guidelines to demonstrate safe and competent use of educational technology resources. | Discrepancy | 2. The development of guidelines will begin during the next project year after the results of the survey have been assessed. |
| 3a. The Project Director and staff will monitor vendor compliance of contract maintenance specifications. | Agreement | 3a. The Project Director stated that he had met with Digital Corporation and Fisher. He checked to see if computers, printers and Monitors were working and being properly maintained. The Project Director works on this with the Director of Program Development, the Assistant Director of Computer Laboratories and the Director of DAIS. |

† Processes numbered to correspond with outcomes

OBJECTIVE B

PART II (continued)

PROCESSES †

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| b. The Project Director and staff will secure vendor participation in training of students in computer maintenance. | Discrepancy | b. Although vendor participation in training for maintenance was in the five year plan, it was not included in the vendor contracts which were executed before the arrival of the Project Director. |
| c. The Project Director will work with the Computer Training Laboratory in establishing a hotline maintenance clearing-house. | Agreement | c. The Computer Training Laboratory has a telephone which was available for people to call, as observed by the evaluators. |
| d. The Project Director will work with the Computer Training Laboratory in developing maintenance request procedures. | Discrepancy | d. Maintenance request procedures will be developed during the next project year. |
| e. The Project Director will work with the Computer Training Laboratory in developing an in-house maintenance program. | Agreement | e. The in-house maintenance program was developed and the Computer Repairman position was advertised. There was difficulty in finding qualified people. |
| f. The Project Director will work with the Computer Training Laboratory in summarizing maintenance procedures to produce a Maintenance Guideline. | Agreement | f. The Project Director verified that the Computer Training Laboratory summarized procedures to produce maintenance guidelines. |

† Processes numbered to correspond with outcomes

OBJECTIVE B

PART III

OUTCOMES

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 1. Data submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director by June, 1983 will show that a Selection Guideline for Educational Technology Hardware has been completed. | Discrepancy | 1. The Library/Media departments were not to be officially under Educational Technology until July 1, 1983. Before that the Project Director provided consultation and his expertise in the area was used, but procedures and guidelines were not documented. |
| 2. Data submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director by June, 1983 will show that procedures have been established to assure safe and competent use of educational technology software and hardware. | Discrepancy | 2. The Library/Media departments were not to be officially under Educational Technology until July 1, 1983. Before that the Project Director provided consultation and his expertise in the area was used, but procedures and guidelines were not documented. |
| 3. Data submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director by June, 1983 will show that an educational technology Maintenance Guideline has been completed. | Discrepancy | 3. The educational technology Maintenance Guideline had not been completed by June 10, 1982, due to time and staff constraints, but the Project Director continued working on it. |

FINAL REPORT

PLANNING, MONITORING, AND IMPLEMENTING (PMI)
EVALUATION MODEL FOR DECISION-MAKING

Reporting Form

Goal: To provide systemwide direction to the application of educational technology

Objective C: By June, 1983, the Educational Technology office will have established guidelines for developing new programs and integrating existing technological programs into the Educational Technology System of the D.C. Public Schools.

PART I

INPUTS

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| - Director of Program Development | Agreement | - The Director of Program Development was designated as Program Manager for this project, as evidenced by ECIA Chapter 2 information distributed to all project coordinators. |
| - Project Director and Staff | Agreement | - The Evaluation Team met with the Project Director on several occasions. A secretary and a W.A.E. Research Assistant were hired as evidenced by personnel records. |
| - Directors or representatives of existing programs in the Educational Technology System:<br>a. The Beltway Project<br>b. Project BEST (Basic Skills Through Technology)<br>c. The Fair Break Program | Agreement | - The project director verified that there were directors or representatives of all programs. He had communicated with all of them and visited their programs. |

OBJECTIVE C

PART I (continued)

INPUTS

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| d. The AIMS Program | | |
| e. Public Private Partnership Foundation Support (Ford Foundation) | | |
| f. Library Science/Media Department | | |
| g. Career Education | | |
| h. Other related educational programs | | |
| - Adequate materials and supplies | Agreement | - The project director verified that materials and supplies were adequate. |
| - Subscriptions to professional journals | Agreement | - The evaluators examined professional journals in the project office. |
| - Adequate office space | Agreement | - The project director stated that office space was adequate. |

OBJECTIVE C

PART II

PROCESSES †

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 1. The Project Director and staff will develop guidelines for integrating presently existing programs into the Educational Technology System - specifically the following:<br><br>a. The Beltway Project<br><br>b. Project BEST<br><br>c. The Fair Break Program<br><br>d. The AIMS Program<br><br>e. Public Private Partnership Foundation Support (Ford Foundation)<br><br>f. Library Science/Media Department<br><br>g. Career Education in Technology<br><br>h. Other educational programs | Agreement | 1. The Educational Technology Project Director consulted with technology projects' personnel, visited programs and reviewed materials for all of the listed programs as well as the Spingarn and the Writing-to-Read programs, and developed a plan for integrating these programs into an Educational Technology system. The plan was observed by the evaluators. |

† Processes numbered to correspond with outcomes

OBJECTIVE C

PART II (continued)

PROCESSES †

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 2a. The Project Director and staff will write guidelines for developing new programs in using Educational Technology. | Agreement | 2a. The evaluators examined guidelines included in proposals for new programs using educational technology. |
| b. The Project Director and staff will explore potential pilot projects - specifically the following: | | |
| (1.) Use of electronic mail | Agreement | (1.) The project director stated that he had discussions concerning electronic mail with Director of DAIS. |
| (2.) Use of videodisks | Agreement | (2.) A proposal for developing and using videodisks was prepared for submission to the U.S. Department of Education. |
| (3.) Use of other interactive technologies. | Agreement | (3.) The evaluators saw letters and memos concerning the District's potential involvement in other interactive technologies such as television. |

† Processes numbered to correspond with outcomes

OBJECTIVE C

PART III

OUTCOMES

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 1. Data submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project director by June, 1983 will show that guidelines have been established for integrating Educational Technology Programs such as the Beltway Project, Project BEST, the AIMS program, the Fair Break program, and the Library Science/Media Department into the Educational Technology System. | Agreement | 1. The program plan for Educational Technology for 1983-84, position papers and a testimony by the Project Director representing the Superintendent before the House Education and Labor Subcommittee on Elementary, Secondary, and Vocational Education on the topic of Computer Technology (see Appendix C), are evidence that guidelines have been established for integrating existing Educational Technology programs into the Educational Technology System. |
| 2. Data submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director by June, 1983 will show that guidelines have been established for developing new programs compatible with the Educational Technology System. | Agreement | 2. Proposals examined by the evaluators included "Improved Mathematics and Science Computerized Instructional Project (IMSCP)" to develop interactive videodisk courseware and train teachers; "Math and Science Instructional TV" to help teach those subjects to Junior High School Students; "High-Tech Demonstration Center" in conjunction with the office of Career Development. Other documents examined were information on the D.C. Public School's involvement with the National University of the Air and with Cable Television. One of the evaluators served on the Science and Mathematics Instructional Television Program Committee. Guidelines were presented to the members in areas such as criteria for selecting participating schools and rationale for levels to be considered. |

FINAL REPORT

PLANNING, MONITORING, AND IMPLEMENTING (PMI)
EVALUATION MODEL FOR DECISION-MAKING

Reporting Form

Goal: To provide systemwide direction to the application of educational technology

Objective D: By June, 1983 effective management practices will have been demonstrated in the Educational Technology office.

PART I

INPUTS

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| - Director of Program Development | Agreement | - The Director of Program Development was designated as Program Manager for this project, as verified by ECIA Chapter 2 information distributed to all project coordinators. |
| - Project Director and staff | Agreement | - The Evaluation Team met with the Project Director. A secretary and a WAE Research Assistant were hired as evidenced by personnel records. |
| - Staff of Instructional Services Center | Agreement | - The project director had met with staff of the Instructional Services Center (ISC). He reported that his office and the ISC coordinated educational technology activities. |
| - Other school districts | Agreement | - The project director was in contact with other school districts interested in exchanging information on educational technology as evidenced by letters on file. |

OBJECTIVE D

PART I (continued)

INPUTS

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| - DCPS personnel who write grant proposals | Agreement | - The project director had been in contact with other DCPS personnel who were writing proposals on educational technology topics as evidenced by proposals submitted. |
| - Five year Computer Literacy Plan | Agreement | - The evaluators observed the Five Year Computer Literacy Plan. |
| - Reports, periodicals and other educational technology documents | Agreement | - The evaluators examined educational technology documents. |
| - Dissemination facilities | Agreement | - The evaluators observed the Educational Technology office's word processor and discussed its uses with the secretary. |
| - Adequate office supplies and equipment | Agreement | - The project director stated that office supplies and equipment were adequate to begin the program. |
| - Adequate office space | Agreement | - The project director stated that office space was adequate. |

OBJECTIVE D

PART II

PROCESSES †

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 1. The Project Director will perform general and special administrative duties including the following: | | |
| a. Supervise staff | Agreement | a. The project director was observed supervising his secretary and research assistant. |
| b. Develop a management system for the Educational Technology office | Agreement | b. The office has on record the Chapter 2 proposal for 1983-84 which included the management system developed during 1982-83. |
| c. Seek corporate involvement in the Computer Literacy Program | Agreement | c. The project director verified that he sought corporate involvement in the Computer Literacy program, for example, with IBM and Atari. He had letters and memos as evidence. |
| d. Negotiate for involvement with other agencies such as the U.S. Education Department | Agreement | d. The project director provided evidence of involvement with the U.S. Education Department, George Washington University, Howard University, Station WETA, the Children's Museum, the National Science Foundation, The National Institute of Education, University of the District of Columbia, Cable TV and the National University of the Air. |

† Processes numbered to correspond with outcomes

OBJECTIVE D

PART II (continued)

PROCESSES †

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| e. Seek membership on Cable Television Design Commission and Public Access Board | Agreement | e. The project director is on the Task Force for CTDC (Cable Television Design Commission). The evaluators reviewed letters submitted by the Superintendent to the Mayor, the City Council and the School Board recommending two people (one administrator and one School Board Member) to be on the Design Commission and the Public Access Board. |
| f. Evaluate conformance with the Five Year Computer Literacy Plan | Agreement | f. The evaluators observed the Five Year Plan displayed on the wall. The Project Director verified that he evaluated conformance with the plan. |
| g. Work cooperatively with the Instructional Services center on teacher recertification requirements for fall, 1987 | Agreement | g. A D.C. School Board policy directive to take effect July 1, 1983 concerning the requirement for computer literacy in order for teachers to obtain certification was approved on March 16, 1983 (See Appendix D.) |
| h. Develop plans for strengthening existing and establishing new Resource Centers for Educational Technology | Agreement | h. The Project Director stated that he talked to representatives of the Media Center, the Computer Lab and the Library Science office. Evaluators examined plan for the Media Center and the proposal for a High Technology Demonstration Center. |

† Processes numbered to correspond with outcomes

OBJECTIVE D

PART II (continued)

PROCESSES †

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 2. The Project Director will plan the establishing of two advisory committees to convene in the 1983-84 school year, as follows: | | |
| a. Internal, to contain representatives from elementary schools, secondary schools, adult education, special education, parents, students, administration, Computer Training Laboratory, Instructional Services Center and school board. | Agreement | a. The evaluators examined the list of members of the advisory committee who gave input into the proposal for instructional Television. One of the evaluators serves on that committee as an advisor for evaluation. For administrative reasons, the internal and external committees were combined. |
| b. External, to contain representatives from private industry such as IBM, Apple, Cable Co., National University of the Air; public and government groups such as PBS, NSF, NASA; and University personnel. | Agreement | b. (See a above) |

† Processes numbered to correspond with outcomes

OBJECTIVE D

PART II (continued)

PROCESSES †

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 3. The Project Director will exchange information concerning educational technology as follows: | | |
| a. Monitor state-of-the art developments of computers and other interactive technologies through reports, periodicals and other documents | Agreement | a. The evaluators observed periodicals and other documents used by the project director for monitoring state-of-the art developments. He described his involvement. |
| b. Share and receive ideas from other school districts | Agreement | b. The Project Director produced written evidence of his sharing and receiving ideas with school districts including Spokane, WA; Irvine, CA, Houston, TX and Boston, MA. |
| c. Attend professional conferences | Agreement | c. The Project Director had programs and other evidence of professional meetings attended which included the Association for Developers of Computer-Based Instruction Systems (ADCIS), and the Urban Superintendents' Technology Study Group. |
| d. Develop mechanisms to disseminate computer literacy and other educational technology information to interested groups | Agreement | d. The Project Director described and showed evidence of mechanisms to disseminate information through telephone responses, letters, distribution of the five year plan, speeches etc. |

† Processes numbered to correspond with outcomes

OBJECTIVE D

PART II (continued)

PROCESSES †

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| e. Promote computer literacy and other educational technology programs via newsletters, open house, press releases, clubs, staff development, internships, meetings, forums, exemplary programs, newspapers, professional journals, TV, parents, etc. | Agreement | e. The Project Director described and showed evidence of speeches and press releases such as testimony before Congress, his keynote speech at the Region B Teacher Convention, a press release to a Minnesota paper and presentations to the 3rd Annual Video Media Fair, the Computer Literacy Summer Training Program and the Hardy Middle School PTA. |
| 4. The Project Director will provide technical assistance to district personnel in areas such as follows:<br><br>a. Writing proposals on educational technology subjects for submission to the U.S. Education Department, National Science Foundation, Computer Companies and other potential sources of funds<br><br>b. Planning for educational technology curriculum development and staff development. | Agreement | 4. The Project Director verified that he has been providing technical assistance to other DCPS personnel in the areas of proposal writing and planning for staff development. This was further evidenced by examination of some of the proposals and plans. |

† Processes numbered to correspond with outcomes

OBJECTIVE D

PART III

OUTCOMES

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 1. Records submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director by June, 1983, will show that the general administrative duties necessary in establishing and operating the Educational Technology office have been accomplished. | Agreement | 1. Records on file show that equipment and supplies were ordered and delivered, office space was assigned and then expanded, staff was hired, and memos from the DCPS Superintendent introducing the Project Director (Assistant Superintendent) were distributed. |
| 2. A document submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director by June, 1983, will show that a plan for establishing an internal and an external advisory committee to convene in the 1983-84 school year has been completed. | Agreement | 2. The Advisory Committee containing members from within the D.C. Public Schools as well as from outside, has been established as the "Mathematics and Science Instructional Television Program Committee." (See Appendix E.) |
| 3. Records submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director by June, 1983 will show that procedures for the exchange of information (monitoring state-of-the-art developments and disseminating educational technology information concerning the DCPS program) have been established. | Agreement | 3. Procedures established for the receipt of information from other areas included maintaining subscriptions to journals and other sources of information, filing of letters and other written information received and documenting through return letters, information received by telephone and in person. Procedures established for exchange and sharing of information included maintaining copies of speeches made, letters written, and papers presented or published. |

OBJECTIVE D

PART III (continued)

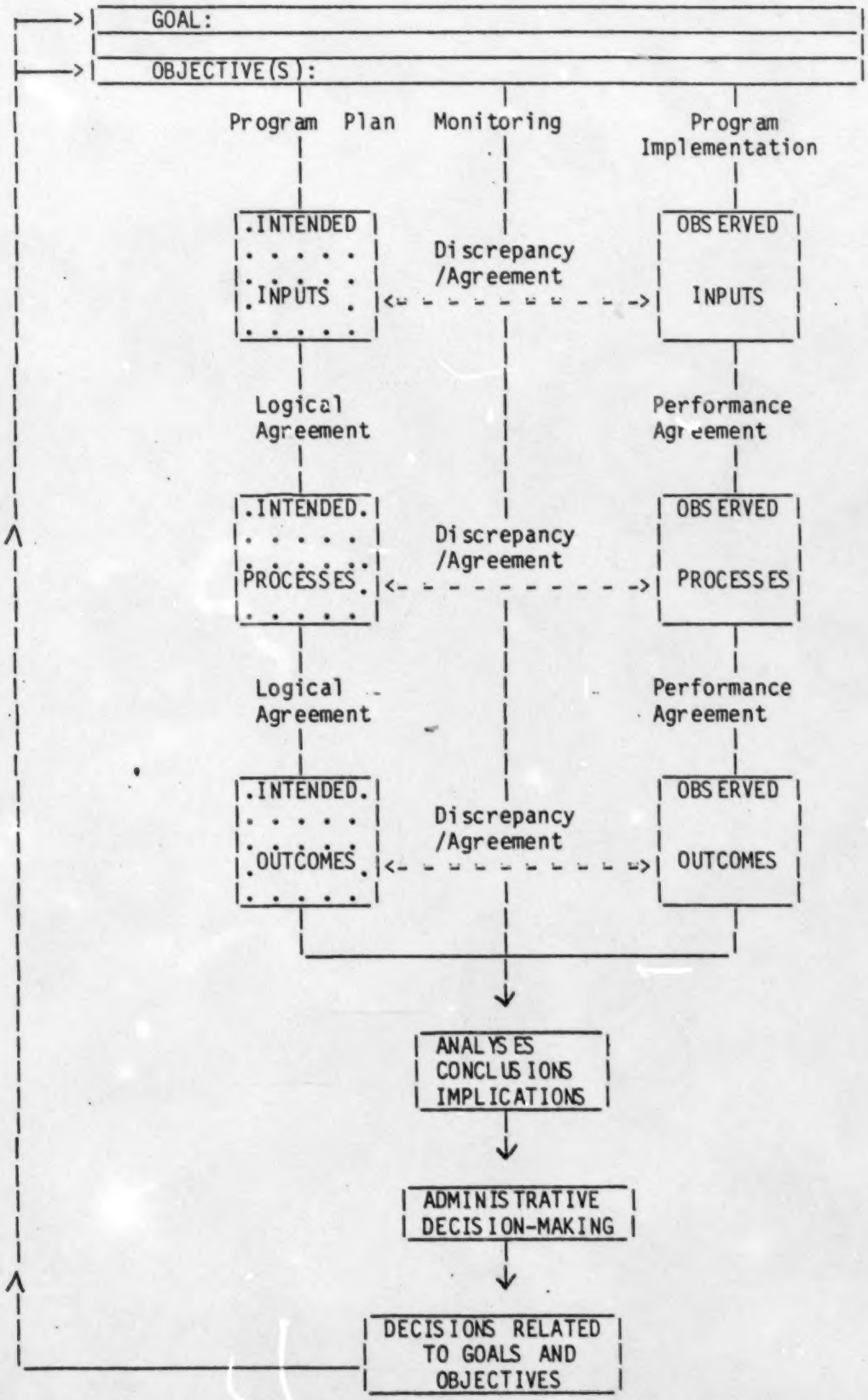
OUTCOMES

| INTENDED | STATUS | OBSERVED |
|---|---|---|
| 4. Records submitted to the ECIA Chapter 2 Evaluation Unit by the Educational Technology Project Director by June, 1983, will show that technical assistance to other departments in tasks such as proposal writing and educational technology curriculum and staff development has been provided. | Agreement | 4. The evaluators examined the proposal for partnership in Computer Assisted Instruction, one for the bilingual office on Computers for parents, one for the security office and two in job training, all for which the Project Director provided technical assistance. The Educational Technology's Instructional Television proposal included the matching of CBC objectives with television and film scripts. The proposal also included plans for staff development. The Superintendent's directive on Computer Literacy Requirements (see Appendix D) includes requirements for staff development in that area. |

# APPENDIX A

# EVALUATION MODEL SCHEMA

EVALUATION MODEL SCHEMA



APPENDIX B

EDUCATIONAL TECHNOLOGY NEEDS
ASSESSMENT QUESTIONNAIRE

EDUCATIONAL TECHNOLOGY NEEDS ASSESSMENT QUESTIONNAIRE

Location _____

Principal or Director _____

Educational Technology Contact Person _____

A. For all computers located in your school or center or office, please complete the following chart by writing in the COMPUTER BRAND name and the appropriate numbers in each column.

| COMPUTER BRAND | Number of Terminals | No. In Working Condition | Number of Printers | No. In Working Condition | Estimated Average Hours Per Week Use (Per Computer) | Estimated Number of Teachers Per Week Using all Terminals | Estimated Numbers of Students Per Week Using All Terminals | Estimated Number of Others Per Week Using All Terminals[1] |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

B. Please complete the following chart by writing in the COMPUTER BRAND name and NUMBER OF TERMINALS (as above), and checking the appropriate boxes in each column.

| COMPUTER BRAND | Number of terminals | LOCATION | | | | | | FUNDS | | | | | | | | Cathode Ray Tube | Tape Deck | Disk Drive |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Classroom | Mobile | Lab | Office | Library | 2 Other | 3 Grant | PTA | School | Special Ed | Gifted | Educator | 4 Other | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

C. The following chart is to record the grade level(s) for instructional use and other school use. Please complete the chart by writing the COMPUTER BRAND NAME in the left hand column and the grade level or levels (K-12 and A for adult) in the appropriate boxes in each column. (See sample.)

| | INSTRUCTIONAL USE | | | | | | | | | OTHER SCHOOL USE | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COMPUTER BRAND | Comp. Lit. | Science | Social Studies | Math | Business | Lang. Arts | Spelling | Reading | Other Other Subjects[5] | Administr. | Class Mgmt. | Special Ed. | Test Scoring | Scheduling | Recording Grades | Attendance | Other School Use[6] |
| APPLE | | 8 | | 5-8 | | | 5/6 | 5/6 | | A | | 6 | | 5-8 | | 5-8 | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

D. Please complete the following chart by writing in the COMPUTER BRAND NAME and checking the appropriate boxes in each column for other services. For services not listed, please specify in the blanks provided.

| COMPUTER BRAND | OTHER SERVICES | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Demo | Seminar | Workshop | Tours | Assist. | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

1 Specify which "others" _____

2 Specify other locations _____

3 Specify which grant program _____

4 Specify other funding sources _____

5 Specify other subjects _____

6 Specify other school use _____

E. Which COMPUTER BRANDS would you recommend to others and why?

| RECOMMENDED BRAND | REASON FOR RECOMMENDATION |
|---|---|
| | |

F. Which COMPUTER BRANDS would you recommend against and why?

| RECOMMENDED AGAINST | REASON |
|---|---|
| | |

G. For each of your COMPUTER BRANDS, please rate the maintenance service and repair service you have received by circling the appropriate number in each area.

| COMPUTER BRAND | MAINTENANCE SERVICE | | | | | REPAIR SERVICE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Poor | | | | Excellent | Poor | | | | Excellent |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

H. In the left hand column please list instructional management processes based on technological resources (e.g. C.A.I.-Computer Assisted Instruction) that are used in your school.

For each process, rate the effectiveness in terms of student academic progress and interest by circling the appropriate number.

| INSTRUCTIONAL MANAGEMENT PROCESSES | Academic Progress | | | | | Interest | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Poor | | | | Excellent | Poor | | | | Excellent |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

I. Please list the computer journals which are available to you and check the source. If none, please write "NONE".

| Journal Name | SOURCE | | | |
|---|---|---|---|---|
| | School or Office Subscription | Internal Donation | External Donation | Other* |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

* Please specify other source _____

J. Please indicate problems in the three areas identified below.

| HARDWARE | SOFTWARE | RELATED |
|---|---|---|
| | | |

K. Please indicate positive aspects of the three areas indicated below.

| HARDWARE | SOFTWARE | RELATED |
|---|---|---|
| | | |

L. What kind of inservice program would you recommend for the summer to encourage maximum use of the computers?

_____

_____

M. What materials do you recommend for purchase or development to encourage maximum use of the computers?

_____

_____

N. Please attach a list of software (ex. programmed instruction, scoring) with the name, topic, recommended level (if applicable), and producer.

O. Comments _____

_____

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# APPENDIX C

## CONGRESSIONAL TESTIMONY ON COMPUTER TECHNOLOGY

STATEMENT OF

KYO R. JHIN
ASSISTANT SUPERINTENDENT FOR EDUCATIONAL TECHNOLOGY

DISTRICT OF COLUMBIA PUBLIC SCHOOLS

before

House Education and Labor Subcommittee on
Elementary, Secondary, and Vocational Education

April 21, 1983

Mr. Chairman, Members of the Committee and my distinguished colleagues, on behalf of the Superintendent of the District of Columbia Public Schools, Mrs. Floretta D. McKenzie, I am pleased to join you here today to discuss some of the innovations in computer technology that we are making in the D.C. Public Schools, innovations which, we believe, will pay off in academic and career success for our students. Our problems are not unique among urban school districts, but it is my strong belief that our solutions are.

Standardized test scores of D.C. Public School children have risen steadily over the past three years. In recently released data, we have seen substantial progress among elementary school students in the mastery of reading and math skills. There are schools in the far Northeast and Southeast sections of the city, areas experiencing the greatest degree of poverty, which are models of student achievement.

The D.C. Public Schools have moved aggressively to improve instructional options for all students, pre-kindergarten through twelfth grade, as well as those enrolled in adult education. In this regard, there are several major thrusts that we have undertaken. My task today is to inform you of one phase of that thrust...the integration of computer technology into the educational system.

The following statements are in response to bill, H.R. 1134.

1. Why did the D.C. Public Schools decide to integrate computers into educational system?

The mission of the District of Columbia Public Schools is"...to promote excellence by providing a viable and comprehensive instructional program (pre-kindergarten through twelfth grade) leading to the attainment of knowledge, competencies, and skills which upon completion will enable each student to function as a useful citizen." While the mission of the school system need not change, the strategies used to successfully accomplish the mission must be updated.

The continuing development of new technology especially of computer-related disciplines, is revolutionizing American society. The impact of computers spans age, economic, and ethnic lines. In the District of Columbia, with its heavy concentration of white collar industry, computers are used in businesses to manage data and information. As communication devices, they link us with the rest of the country and the world. The Federal and District governments, major local employers, along with their counterparts in the private sector, are now requiring some degree of computer literacy for many positions that are becoming available. Even during times of high unemployment, the local newspapers carry page after page of advertised positions requiring skills in computer technology.

Our students, as consumers, have felt the impact of computer technology. When making purchases, they have seen electronic scanners "read" product labels without understanding the intricate nature of the transaction. At home, their parents receive computerized utility, telephone, and credit card bills. Clearly, the need for some degree of computer literacy has become necessary "to function as a useful citizen."

Superintendent Floretta D. McKenzie is committed to the implementation of computer technology into the educational system. She has established a Computer Literacy Planning Group which includes teachers, supervisors and administrators, to develop a Computer Literacy Five Year Plan, School Year 1983-1987. I would like to have this Five Year Plan entered into the record.

On March 16, 1983, the D.C. Board of Education approved the following policies:

1. That by the end of School Year 1983-84, student computer laboratories be established in all schools, with attention to security needs.

2. That computer literacy and software selection skills be required for all instructional personnel (teachers, supervisors and administrators) as part of the five year recertification requirement.

3. That beginning with School Year 1983-84, all new teachers would have to demonstrate computer literacy before being granted permanent tenure.

4. That every student be required to demonstrate a command of the skills that constitute computer literacy before the completion of grade nine, beginning no later than School Year 1987-88.

In order to implement the board policy and in response to this changing environment, the District of Columbia Public Schools is developing a systemwide Computer Literacy Program. The program, proposed to be implemented over the next five years, will require major investments of staff, time, and resources.

The objectives of the Computer Literacy Program are:

- To develop computer awareness among students, teachers, supervisors, and administrators.
- To develop and implement a computer literacy curriculum.
- To design and implement a Computer Training Laboratory.
- To apply computer technology in the local school implementation of the Competency-Based Curriculum through drill and practice, tutorials, problem solving, simulations, and other appropriate techniques.
- To apply computer technology in classroom management, including record keeping and the tracking and reporting of student progress.
- To apply computer technology to local schools.

Some of the programs in computer technology that meet the stated objectives are:

- THE WRITING TO READ PROGRAM, is a computer based instructional system funded by the International Business Machines Corporation. This program involves 1500 kindergarten and first-grade students across Washington, D.C. Through the use of computers, tape recorders, work journals and typewriters in a special learning laboratory, these students learn to compose and read their own stories.
- THE COMPUTER LITERACY TRAINING LABORATORY, is a computer based instructional system that has trained over 500 teachers, supervisors and administrators in computer literacy.
- THE COMPUTERIZED GUIDANCE INFORMATION PROGRAM, has made guidance information available to all junior and senior high school students, as well as computer programming to all senior high schools.
- THE BELTWAY MICROCOMPUTER/VIDEODISK PROJECT, is sponsored by the U.S. Department of Education. This project involves elementary schools and provides the Education Department and the D.C. school system with the opportunity to study how advanced technology can be introduced into the school setting.
- THE NSF SCIENCE PROGRAM, in cooperation with American University provides approximately 50 junior high school teachers with training, equipment and software for using computers for activities in science.

- THE AUTOMATED INSTRUCTIONAL MANAGEMENT SYSTEM (AIMS), provides teachers in eight elementary schools with automated checklists for each child, classroom grouping reports, and diagnostic information for each child at any time during the school year.

- THE CAREER CENTERS, offers students computer technology training leading to apprenticeships in: electronic data processing, systems analysis and design, applications and systems programming, data collection and conversion, customer engineering, computer programming, and system engineering.

- THE SENIOR HIGH SCHOOL COMPUTER-ASSISTED INSTRUCTION PROGRAM, enables students to acquire basic computer literacy skills, access career guidance data files, develop independent study habits and skills essential to success in higher education, and meet an important requirement recently established by the College Board.

- COMPUTERONICS, reaches 23 schools providing instruction in computer problem solving and computers in society.

Approximately 1450 microcomputers and minicomputers are installed in our schools to support the D.C. Public Schools computer initiative.

2. What were the difficulties you encountered?

We encountered no real difficulties in developing the Five Year Plan. However, one of the most complicated aspects was in deciding on hardware and software.

3. How would a National Center for Personal Computers in Education have helped you?

A National Center for Personal Computers in Education would have provided us with the state-of-the-art information on computer technology.

4. How would a National Center for Personal Computers in Education help you now that you've started the program?

Such a Center could help us to--

(a) develop courseware materials for use in areas in which available courseware materials are inadequate;

(b) devlop methods for enabling handicapped individuals to use computers for communication and educational purposes;

(c) establish a computer library that would allow students to borrow personal computers for use outside the classroom;

(d) assess the relative quality and merits of commercially available microcomputers.

(e) develop teacher training materials, including computer progams, films, slides, pamphlets, and audio and video cassettes, that will--

(1) instruct educators about personal computers and their uses to enable them to determine the amount of financial resources and personnel needed to commit to the use of computers in their educational system,

(2) instruct educators in the methods of using computers to enhance the learning experiences of their students in the classroom, in laboratories, and at home, and

(3) instruct teachers in computer programing and in the development of courseware materials;

5. Did you experience problems in finding teachers who were adequately trained to teach?

In terms of classroom student computer literacy instruction, it was necessary to train teachers in the area of computer hardware and software. During the past year, we were able to provide computer literacy training to over 500 teachers, supervisors and administrators.

6. Do you anticipate difficulties in keeping up-to-date with computer advances?

No, we do not anticipate difficulties in keeping up-to-date with computer advances because our contractual arrangements with vendors have provisions to up-date equipment.

In order to carry out the provisions of this bill, it is desirable to have ten to twelve Centers for Personal Computers in Education to provide needed services to state and local education agencies.

We feel that carefully planned National Centers for Personal Computers in Education can be a great assistance to school systems who will enter into computer related instructional activities. We would like to congratulate Congressman Thomas J. Downey for introducing this bill.

We hope that your committee will support this bill because it will benefit millions of children in the United States.

We are asking Congress to reaffirm its commitment to improve and expand computer-related instructional programs in the country, so we can continue to prepare our students for the 1980's and 1990's. Thank you.

APPENDIX D

SCHOOL BOARD DIRECTIVE CONCERNING RECERTIFICATION

DIRECTIVE DIRECTIVE

PUBLIC SCHOOLS OF THE DISTRICT OF COLUMBIA
415 TWELFTH STREET, N.W.
WASHINGTON, D.C. 20004

| ORIGINATING OFFICE | NUMBER |
|---|---|
| | 200.17 |
| Office of the Superintendent | DATE |
| SUBJECT | July 11, 1983 |
| | RECISION |
| Computer Literacy Requirement of Recertification and for Granting Permanent Tenure | |

On March 16, 1983, the Board of Education approved the following:

- That computer literacy and software selection skills be required for all instructional personnel (teachers, supervisors, and administra-= tors) as part of the five year recertification requirement.

- That beginning with SY 1983-84, all new teachers, instructional personnel, etc., will have to demonstrate computer literacy before being granted permanent tenure.

It is hereby directed that:

- Beginning September 1, 1983, all new instructional personnel (teachers, supervisors and administrators) will have to demonstrate computer literacy before being granted permanent tenure.

- Effective July 1, 1983, all instructional personnel (teachers, supervisors and administrators) will be required to have computer literacy and software selection skills as part of the five year recertification requirement. Any instructional personnel, at the time of application for renewal of their professional certificate, must present an official transcript from an accredited college/university or documentary evidence from the District of Columbia Public Schools' Department of Staff Development. The official transcripts/documentary evidences must show that prior to July 1, 1983, the instructional personnel either successfully completed or on July 1, 1983 were enrolled in the final required course for completion of the educational recertification requirement that was in effect prior to July 1, 1983 to be eligible for recertification (regardless of the educational course requirement that is in effect at the time their present professional certificate expires). Instructional personnel who have either completed one three-hour course toward recertification or have enrolled in one three-hour course prior to July 1, 1983 will only be required to take three additional hours in computer literacy.

  Educational employees who have not completed the required six semester hours by July 1, 1983 must complete a course in computer literacy and software selection skills to renew their current five year certificate. Three of the six semester hours required must be in computer literacy and software selection skills.

Computer literacy is defined as an acquired knowledge of computers and an understanding of the social implications of that knowledge; and the ability to apply skills in communicating with computers.

Computer literacy and software skills shall be demonstrated through the following:

- Completion of the computer literacy course offered through the District of Columbia Public Schools (three semester credits or 50 clock hours of coursework)
- Completion of a comparable computer literacy course (three semester hours) to that offered by the District of Columbia Public Schools from an accredited college or university upon submission of an official transcript.

These new requirements shall be implemented by the Division of Personnel and the Department of Certification and Accreditation.

A comparable computer literacy course shall consist of the following:

I. Name events in the history of computers

II. List a variety of uses of computers in education and describe the benefits of each

- Describe examples of administrative application of the computer
- Explain computer literacy managed instruction (CMI)
- Explain applications of the computer that are appropriate to the computer literacy program
- Explain potential programming applications in the subject areas
- Differentiate between computer assisted instruction (CAI) applications such as drill and practice, tutorial, simulation, and problem solving

III. Describe briefly how a computer works

- Explain the basic operation of a computer
- Describe the structure of a computer system and the functions of the five major parts
- Identify the hardware components of a microcomputer
- Identify the special components of a microcomputer such as chips, interface cards, and motherboard
- Assemble and disassemble a microcomputer
- Describe the process that is used in a computer to enable interaction with user

IV. Use the correct computer terminology as it applies to hardware and software

V. Describe the variety of ways computers impact on society

- Identify at least ten examples of the present impact of computers on society

VI. Discuss limitations and misuses of computers

VII. List careers which are computer related

VIII. Operate a computer system correctly and efficiently

- Demonstrate how to turn on a computer and begin operation in either immediate or deferred mode
- Identify the position of the keys on a keyboard and special functions of specific keys
- Use procedures for terminating a program
- Use the computer's editing features
- Use the basic system commands
- Use a computer system's utility programs
- Explain how a disk operating system functions
- Explain the format of a diskette
- Explain a file type
- List procedures for maintaining the floppy diskettes
- Initialize a diskette
- Copy a diskette
- Create a save programs on a diskette
- Produce a CATALOG and access a program from it
- List considerations for proper hardware maintenance
- Respond appropriately to common error messages

IX. Critique Software and Courseware

- List kinds of educational software/courseware available for instructional use

- List available educational software/courseware resources
- Identify non-commercial sources of educational software/courseware
- List courseware evaluation and selection considerations
- Discuss the general design and format of instructional lessons incuding special features

X. Read and write simple programs that work

- Write a simple graphics program
- Write and edit sample programs which use the following BASIC statements:

  PRINT
  LET
  INPUT
  GO TO
  IF/THEN
  FOR/NEXT

- Edit, de-bug, and describe the output from given sample programs containing program errors

# APPENDIX E

## EDUCATIONAL TECHNOLOGY ADVISORY COMMITTEE

DISTRICT OF COLUMBIA PUBLIC SCHOOLS

MATHEMATICS AND SCIENCE INSTRUCTIONAL TELEVISION PROGRAM COMMITTEE

| | NAME | POSITION | OFFICE OR AGENCY |
|---|---|---|---|
| 1. | Mildred Reynolds | Mathematics Teacher | Sousa Junior High |
| 2. | Amy Lee | Science Teacher | Rabaut Junior High |
| 3. | Mary Harbeck | Science Supervising Director | Instructional Services Center |
| 4. | Gordon Lewis | Mathematics Supervising Director | Instructional Services Center |
| 5. | Rosalyn Hobson | Student (Winner, Jr, High Science Fair) | Deal Junior High |
| 6. | Ingrid Turner | Student (Winner, Sr. High Science Fair) | H.D. Woodson Sr. High |
| 7. | Amanda Garnett | Principal | Hardy Middle School |
| 8. | Otis Thompson | Principal | Hamilton Junior High |
| 9. | Kyo Jhin | Assistant Superintendent | Educational Technology |
| 10. | Dorothy Stephens | Director | Instructional Services Center |
| 11. | Harry Burke | Director | Media Center |
| 12. | Mary Johnson | Administrative Asst. | Regional Administrative Unit |
| 13. | William H.L. Brown | President | D.C. Congress of Parents & Teachers |
| 14. | Walter Smith | Visiting Faculty Fellow | National Science Teacher Association |
| 15. | Joe Caravella | Director | National Council of Teachers of Mathematics |
| 16. | Julia V. Clark | Assistant Professor of Math & Science | Howard University School of Education |

| | NAME | POSITION | OFFICE OR AGENCY |
|---|---|---|---|
| 17. | Otha Brandon | Assistant Director | Howard University WHMM Television |
| 18. | Marcia McBeath | Director, ECIA Chapter 2 | Division of Quality Assurance |
| 19. | J. Weldon Greene | Director | Division of Program Development |
| 20. | Walter Bogan | Assistant Education Officer | American Association for the Advancement of Science |
| 21. | James T. Guines | Associate Superintendent | Office of Instruction |